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EXAMINER	
NGUYEN, PHU K	
ART UNIT	PAPER NUMBER
2671	12

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 09/547,065	**Applicant(s)** ALCORN ET AL.
	Examiner Phu K. Nguyen	**Art Unit** 2671

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 7/25/2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 42-69 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 42-69 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Phu Nguyen

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: .

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 42-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over KAMEN et al. (6,342,884) in view of TAYLOR et al. (6,518,974).

As per claim 42, Kamen teaches the claimed "graphics system" comprising "a two-dimensional graphics imaging system constructed and arranged to manipulate two-dimensional (2D) images represented by pixel data comprising color and X,Y coordinate data, and excluding Z coordinate data" (Kamen, column 3, lines 45-52), and "to composite separately generated three-dimensional (3D) images represented by pixel data comprising X,Y,Z coordinate and color data, wherein the X,Y coordinate data define horizontal and vertical dimensions of a pixel's display screen location, and wherein the Z coordinate defines an orthogonal distance from viewpoint to the image rendered at a pixel" (Kamen, column 4, lines 1-38). It is noted that Kamen does not explicitly teach "2D graphics image "pipeline" as claimed. Taylor teaches the such 2D graphics image "pipeline" is well known in the art (Taylor, column 10, lines 56-60. It would have been obvious at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 2D graphics image system such as the 2D texture system (Kamen, figure 3) can be implemented as a graphics "pipeline" for performing the task of combining the 2D graphics data and the 3D object mesh structure.

Claim 43 adds into claim 42 "a rendering pipeline comprising: a geometric pipeline constructed and arranged to generate a two-dimensional image from one or more model views represented by primitive data; and said imaging pipeline" which Kamen teaches in column 3, lines 21-60.

Claim 44 adds into claim 43 "operational components of said geometric pipeline are utilized by said imaging pipeline to composite said separately generated 3D images" which Kamen teaches in column 6, lines 26-62.

Claim 45 adds into claim 42 "a frame buffer for storing pixel data to be displayed on a display device" (Karen, column 8, lines 48-50), and wherein said 3D images comprise: "a stored image stored in the frame buffer; and a next image to be composited with the stored image" (Kamen, column 8, lines 36-40).

Claim 46 adds into claim 45 "said next image is stored in a system memory" which Kamen teaches in column 8, lines 36-40.

Claim 47 adds into claim 45 "said next image is stored in said frame buffer" which Kamen teaches in the memory 58 (figure 3).

Claim 48 adds into claim 42 "a depth buffer configured to store Z coordinate data for each pixel in a display scene; and a depth test module constructed and arranged to compare Z coordinate data of said 3D images, and to store in said depth buffer Z coordinate data of each pixel of the 3D image that is closest to viewpoint" which Kamen does not explicitly teach. However, Taylor teaches that for 3D graphic processing system, a depth buffer and depth test module are well known (Taylor, column 13, lines 60-65). It would have been obvious to a person of ordinary skill in the art at the time the

invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could implement a depth Z buffer and the occlusion test to remove the hidden surface for representing the 3D objects in the display screen.

Claim 49 adds into claim 48 "for each pixel, said imaging pipeline writes to a frame buffer of the graphics system the color data of the 3D image that is closest to the viewpoint" which would have been obvious because such technique (e.g., hidden surface removal) is widely used for representing the 3D objects on the display screen.

Claim 50 adds into claim 42 "said imaging pipeline receives said Z coordinate data over a data channel of the imaging pipeline configured to transfer data other than Z coordinate data, and receives said X,Y coordinate data over an address data channel" which Kamen does not explicitly teach. However, Taylor teaches that for 3D graphic texturing system, such data transferring processes are well known (Taylor, column 13, line 60 to column 14, line 60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could implement a depth Z data transferring and texture data processing to remove the hidden surface for representing the 3D objects in the display screen.

Claim 51 adds into claim 50 "the data other than Z coordinate data is color data, and the channel provided to transfer data other than Z coordinate data is a color data channel" which Kamen does not explicitly teach. However, Taylor teaches that for 3D

color data for use in texturing the 3D object are well known (Taylor, column 25, line 5 to column 26, line 66). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could texture data containing the color information for representing the 3D objects in the display screen.

Claim 52 adds into claim 42 "a frame buffer for storing pixel data, and wherein the 3D images comprise a stored 3D image stored in the frame buffer and a next 3D image to be composited with the stored 3D image, wherein the next 3D image is passed through the imaging pipeline twice to composite it with the stored 3D image" which Karen teaches in figure 3.

Claim 53 adds into claim 48 "said depth test module receives Z coordinate data of a next 3D image to be compared with a 3D image stored in a frame buffer of the graphics system over a color data channel of the imaging pipeline" which Karen does not explicitly teach. However, Taylor teaches that for 3D graphic processing system, a such depth test module is well known (Taylor, column 13, lines 60-65). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could implement a depth occlusion test to remove the hidden surface for representing the 3D objects in the display screen.

Claim 54 adds into claim 48 "wherein said indication of which 3D image is closest to the viewpoint at each pixel is provided through the setting of a corresponding bit in a

stencil buffer of the imaging pipeline" which Kamen does not explicitly teach. However, Taylor teaches that for 3D graphic processing system, a stencil buffer to record the pixel value of the closest surface is well known (Taylor, column 14, lines 14-60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could implement a depth occlusion test to remove the hidden surface and record the closest pixel on the stencil memory for representing the 3D objects in the display screen.

Claim 55 adds into claim 48 "a stencil buffer containing stencil bits for each pixel in the display scene; and a stencil test module constructed and arranged to set said stencil bits to indicate which 3D image is closest to the viewpoint based on the results of the depth test" " which Kamen does not explicitly teach. However, Taylor teaches that for 3D graphic processing system, a stencil buffer to record the pixel value of the closest surface is well known (Taylor, column 13, line 60 to column 14, line 60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could implement a depth occlusion test to remove the hidden surface and record the closest pixel on the stencil memory for representing the 3D objects in the display screen.

Claim 56 adds into claim 52 “wherein in an initial pass through the imaging pipeline, a depth test is performed to determine which 3D image is to be rendered at each pixel, with an indication of that 3D image and its Z coordinate data being stored in a memory location associated with each pixel, and in a subsequent pass through the imaging pipeline, storing in the frame buffer color data of the 3D image which is to be rendered at each pixel based on the indication stored during the initial pass through the imaging pipeline” which Kamen does not explicitly teach. However, Taylor teaches that for 3D graphic texturing system, such data transferring processes are well known (Taylor, column 13, line 60 to column 14, line 60). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could implement a depth Z data transferring and texture data processing to remove the hidden surface for representing the 3D objects in the display screen.

Claims 57-66 claim a method based on the system of claims 42-56; therefore, they are rejected under the same reason.

Claim 67. (New) A graphics system comprising and;.

As per claim 67, Kamen teaches the claimed “graphics system” comprising “a two-dimensional imaging system configured to manipulate two-dimensional (2D) images” (Kamen, column 3, lines 45-52), and “to composite separately generated stored three-dimensional (3D) image stored in a frame buffer, and a next 3D image,

comprising, a color data channel adapted to receive Z coordinate data and color data of a next 3D image" (Kamen, column 4, lines 1-38). It is noted that Kamen does not explicitly teach "2D graphics image "pipeline" as claimed. Taylor teaches the such 2D graphics image "pipeline" is well known in the art (Taylor, column 10, lines 56-60. It would have been obvious at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 2D graphics image system such as the 2D texture system (Kamen, figure 3) can be implemented as a graphics "pipeline" for performing the task of combining the 2D graphics data and the 3D object mesh structure. Claim 67 also comprises "an image compositing module configured to perform a depth test to determine which 3D image is to be rendered at each pixel based on Z coordinate data of the next image received over the color data channel, and Z coordinate data of the stored 3D image, and to store the Z coordinate data of the 3D image to be rendered at that pixel in a depth buffer, and a stencil test to form a stencil mask identifying which 3D image is the image that is to be rendered at each pixel, wherein the imaging pipeline, in response to receipt of color data over the color data channel, updates a color buffer to have stored therein color data of the 3D image to be rendered at each pixel of the composite image" which Kamen does not explicitly teach. However, Taylor teaches that for 3D graphic processing system, a depth buffer, a depth test module, and a stencil buffer are well known (Taylor, column 13, lines 60-65). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of the teaching of Taylor, to configure Kamen's system as claimed because Kamen's 3D object process could implement a depth Z

buffer and the occlusion test to remove the hidden surface and record the pixel values for representing the 3D objects in the display screen.

Claim 68 adds into claim 67 "said two-dimensional images and said three-dimensional images are represented by pixel data" which Kamen teaches in column 5, lines 12-21.

Claim 69 adds into claim 67 "a geometric pipeline constructed and arranged to create a two-dimensional image from primitive data; and said imaging pipeline" which Karen teaches in column 3, lines 21-60.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (703)305 -9796. The examiner can normally be reached on M-F 8:00-4:30.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3800.

Phu K. Nguyen
September 30, 2003

Phu Nguyen